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L8	115	L5 and @ad<"20011027"	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2005/09/17 16:25
L9	2	"6384819".pn.	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2005/09/17 15:35
L10	6	("5519825" | "5628012" | "5655067" | "5706417" | "5719786" | "5867175").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/09/17 16:04
L11	12	particle adj animat$4	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2005/09/17 16:56
L12	525	particle adj path	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2005/09/17 16:56

L13	397	L12 and @ad<"20011027"	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2005/09/17 16:56
L14	106	L13 and particle.ti.	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2005/09/17 16:56

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Dynamic Simulation of Splashing Fluids - O'Brien, Hodgins (1995) (Correct) (8 citations)
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www.science.uva.nl/research/scs/papers/../papers/archive/Ragas2002a.pdf

Interactive Visualization of Volumetric Vector Fields.. - Guthe, Gumhold, Straßer (2002) (Correct) (1 citation)
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Flow Visualization on Hierarchical Cartesian Grids - Roettger, Schulz.. (Correct)
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of seeds required to generate a synoptic **particle animation** of complex 3D flow by 93% over comparable
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Unknown - (Correct)
data is typically visualized by displaying a **particle animation** or streamlines. We present an efficient
(O(1)Keywords: volume visualization, **particle animation**, fluid flow, irregular grids, computational
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IEE CNF	IEE Conference Proceeding
IEEE STD	IEEE Standard

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Curington, I.;
Information Visualisation, 2001. Proceedings. Fifth International Conference or
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☐ 4. **An interactive modeling method for dynamic natural objects**
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Stalling, D.; Zockler, M.; Hege, H.-C.;
Visualization and Computer Graphics, IEEE Transactions on
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☐ 6. **Texture mixing and texture movie synthesis using statistical learning**
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Visualization and Computer Graphics, IEEE Transactions on
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7. **Modelling of smoke flow taking obstacles into account**
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8. **Using animated 3D graphical simulations to visualize semiconductor prin**
Smith, S.R.;
Frontiers in Education Conference, 1999. FIE '99. 29th Annual
Volume 2, 10-13 Nov. 1999 Page(s):12C5/24 vol.2
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9. **Cloud simulation in virtual environments**
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1 Particle animation and rendering using data parallel computation
Karl Sims
September 1990 **ACM SIGGRAPH Computer Graphics , Proceedings of the 17th annual conference on Computer graphics and interactive techniques**, Volume 24 Issue 4
Full text available: pdf(5.82 MB) Additional Information: full citation, abstract, references, citings, index terms

Techniques are presented that are used to animate and render particle systems with the Connection Machine CM-2, a data parallel supercomputer. A particle behavior language provides an animator with levels of control from kinematic spline motions to physically based simulations. A parallel particle rendering system allows particles of different shapes, sizes, colors and transparencies to be rendered with antialiasing, hidden surfaces, and motion-blur. One virtual processor is assigned to each pri ...

2 Painterly rendering for animation
Barbara J. Meier
August 1996 **Proceedings of the 23rd annual conference on Computer graphics and interactive techniques**
Full text available: pdf(180.73 KB) Additional Information: full citation, references, citings, index terms

Keywords: abstract images, non-photorealistic rendering, painterly rendering, painting, particle systems

3 Design galleries: a general approach to setting parameters for computer graphics and animation
J. Marks, B. Andalman, P. A. Beardsley, W. Freeman, S. Gibson, J. Hodgins, T. Kang, B. Mirtich, H. Pfister, W. Ruml, K. Ryall, J. Seims, S. Shieber
August 1997 **Proceedings of the 24th annual conference on Computer graphics and interactive techniques**
Full text available: pdf(1.25 MB) Additional Information: full citation, references, citings, index terms

Keywords: animation, computer-aided design, image rendering, lighting, motion synthesis, particle systems, physical modeling, visualization, volume rendering

4

Animation aerodynamics
Jakub Wejchert, David Haumann
July 1991 **ACM SIGGRAPH Computer Graphics , Proceedings of the 18th annual conference on Computer graphics and interactive techniques**, Volume 25 Issue 4
Full text available: pdf(1.61 MB) Additional Information: full citation, abstract, references, citings, index terms

Methods based on aerodynamics are developed to simulate and control the motion of objects in fluid flows. To simplify the physics for animation, the problem is broken down into two parts: a fluid flow regime and an object boundary regime. With this simplification one can approximate the realistic behaviour of objects moving in liquids or air. It also enables a simple way of designing and controlling animation sequences: from a set of flow primitives, an animator can design the spatial arrangemen ...

Keywords: aerodynamics, animation, control motion design, flow primitives, fluid mechanics, leaves

5 Predicting the drape of woven cloth using interacting particles
David E. Breen, Donald H. House, Michael J. Wozny
July 1994 **Proceedings of the 21st annual conference on Computer graphics and interactive techniques**
Full text available: pdf(483.23 KB) ps(5.47 MB) Additional Information: full citation, abstract, references, citings, index terms

We demonstrate a physically-based technique for predicting the drape of a wide variety of woven fabrics. The approach exploits a theoretical model that explicitly represents the microstructure of woven cloth with interacting particles, rather than utilizing a continuum approximation. By testing a cloth sample in a Kawabata fabric testing device, we obtain data that is used to tune the model's energy functions, so that it reproduces the draping behavior of the original material. Photographs, ...

Keywords: Kawabata Evaluation System, cloth, drape, particle systems, physically-based modeling

6 Animating explosions
Gary D. Yngve, James F. O'Brien, Jessica K. Hodgins
July 2000 **Proceedings of the 27th annual conference on Computer graphics and interactive techniques**
Full text available: pdf(853.00 KB) Additional Information: full citation, abstract, references, citings, index terms

In this paper, we introduce techniques for animating explosions and their effects. The primary effect of an explosion is a disturbance that causes a shock wave to propagate through the surrounding medium. The disturbance determines the behavior of nearly all other secondary effects seen in explosion. We simulate the propagation of an explosion through the surrounding air using a computational fluid dynamics model based on the equations for compressible, viscous flow. To model the numericall ...

Keywords: animation, atmospheric effects, computational fluid dynamics, natural phenomena, physically based animation

7 Visual debugging of visualization software: a case study for particle systems
Patricia Crossno, Edward Angel
October 1999 **Proceedings of the conference on Visualization '99: celebrating ten years**
Full text available: pdf(748.45 KB) Additional Information: full citation, abstract, references, citings, index terms

Visualization systems are complex dynamic software systems. Debugging such systems is

difficult using conventional debuggers because the programmer must try to imagine the three-dimensional geometry based on a list of positions and attributes. In addition, the programmer must be able to mentally animate changes in those positions and attributes to grasp dynamic behaviors within the algorithm. In this paper we shall show that representing geometry, attributes, and relationships graphically p ...

Keywords: algorithm animation, particle systems, program animation, program visualization, visual debugging

8 Surface modeling with oriented particle systems
Richard Szeliski, David Tonnesen
July 1992 **ACM SIGGRAPH Computer Graphics , Proceedings of the 19th annual conference on Computer graphics and interactive techniques**, Volume 26 Issue 2
Full text available: pdf(4.15 MB) Additional Information: full citation, references, citings, index terms

Keywords: oriented particles, particle systems, physically-based modeling, self-organizing systems, surface interpolation

9 Animating prairies in real-time
Frank Perbet, Maric-Paule Cani
March 2001 **Proceedings of the 2001 symposium on Interactive 3D graphics**
Full text available: pdf(799.80 KB) Additional Information: full citation, references, citings, index terms

Keywords: levels of detail, natural phenomena, real-time 3D graphics

10 Computational fluid dynamics in a traditional animation environment
Patrick Witting
July 1999 **Proceedings of the 26th annual conference on Computer graphics and interactive techniques**
Full text available: pdf(734.22 KB) Additional Information: full citation, references, citings, index terms

Keywords: animation, animation systems, applications, fluid simulations, natural phenomena, numerical analysis, physically based animation, physically based modeling, scientific visualization, texture mapping

11 Modeling the motion of a hot, turbulent gas
Nick Foster, Dimitris Metaxas
August 1997 **Proceedings of the 24th annual conference on Computer graphics and interactive techniques**
Full text available: pdf(5.92 MB) Additional Information: full citation, references, citings

Keywords: animation, convection, gas simulations, gaseous phenomena, physics-based modeling, smoke, steam, turbulent flow

12 Turbulent wind fields for gaseous phenomena
Jos Stam, Eugene Fiume
September 1993 **Proceedings of the 20th annual conference on Computer graphics and**

interactive techniques
Full text available: pdf(184.71 KB) Additional Information: full citation, references, citings, index terms

Keywords: Fourier synthesis, advection-diffusion, gaseous phenomena, stochastic modeling, transport model of illumination, turbulent flow

13 Stable fluids
Jos Stam
July 1999 **Proceedings of the 26th annual conference on Computer graphics and interactive techniques**
Full text available: pdf(1.33 MB) Additional Information: full citation, references, citings, index terms

Keywords: Navier-Stokes, advected textures, animation of fluids, gaseous phenomena, implicit elliptic PDE solvers, interactive modeling, stable solvers

14 Real-time simulation of dust behavior generated by a fast traveling vehicle
Jim X. Chen, Xiadong Fu, J. Wegman
April 1999 **ACM Transactions on Modeling and Computer Simulation (TOMACS)**, Volume 9 Issue 2
Full text available: pdf(1.01 MB) Additional Information: full citation, abstract, references, index terms, review

Simulation of physically realistic complex dust behavior is very useful in training, education, art, advertising, and entertainment. There are no published models for real-time simulation of dust behavior generated by a traveling vehicle. In this paper, we use particle systems, computational fluid dynamics, and behavioral simulation techniques to simulate dust behavior in real time. First, we analyze the forces and factors that affect dust generation and the behavior after dust particles ar ...

Keywords: computational fluid dynamics, particle systems, physically-based modeling, real-time simulation, vehicle

15 Interactive visualization of flow fields
Allen Van Gelder, Jane Wilhelms
December 1992 **Proceedings of the 1992 workshop on Volume visualization**
Full text available: pdf(975.97 KB) Additional Information: full citation, references, citings, index terms

16 Computer modelling of fallen snow
Paul Fearing
July 2000 **Proceedings of the 27th annual conference on Computer graphics and interactive techniques**
Full text available: pdf(3.72 MB) Additional Information: full citation, abstract, references, citings, index terms

In this paper, we present a new model of snow accumulation and stability for computer graphics. Our contribution is divided into two major components, each essential for modelling the appearance of a thick layer of snowfall on the ground. Our accumulation model determines how much snow a particular surface receives, allowing for such phenomena as flake flutter, flake dusting and wind-blown snow. We compute snow accumulation by shooting particles upwards towards t ...

Keywords: avalanches, natural phenomena, snow, stability

17 Modelling physical objects for simulation
Paula Sweeney, Alan Norton, Robert Bacon, David Haumann, Greg Turk
December 1991 **Proceedings of the 23rd conference on Winter simulation**
Full text available: pdf(636.08 KB) Additional Information: full citation, references, citings, index terms

18 Cellular texture generation
Kurt W. Fleischer, David H. Laidlaw, Bena L. Currin, Alan H. Barr
September 1995 **Proceedings of the 22nd annual conference on Computer graphics and interactive techniques**
Full text available: pdf(268.98 KB) ps(5.03 MB) Additional Information: full citation, references, citings, index terms

Keywords: bump mapping, constraints, data amplification, developmental models, displacement mapping, particle systems, texture mapping

19 Spot noise texture synthesis for data visualization
Jarke J. van Wijk
July 1991 **ACM SIGGRAPH Computer Graphics , Proceedings of the 18th annual conference on Computer graphics and interactive techniques**, Volume 25 Issue 4
Full text available: pdf(8.67 MB) Additional Information: full citation, abstract, references, citings, index terms

The use of stochastic texture for the visualization of scalar and vector fields over surfaces is discussed. Current techniques for texture synthesis are not suitable, because they do not provide local control, and are not suited for the design of textures. A new technique, *spot noise*, is presented that does provide these features. Spot noise is synthesized by addition of randomly weighted and positioned spots. Local control of the texture is realized by variation of the spot. The spot is ...

Keywords: flow visualization, fractals, particle systems, scientific visualization, texture synthesis

20 Flow Visualization I: Rendering surface-particles
Jarke J. van Wijk
October 1992 **Proceedings of the 3rd conference on Visualization '92**
Full text available: pdf(747.45 KB) Additional Information: full citation, abstract, references, citings

Surface-particles are very small facets, modeled as points with a normal. They can be used to visualize flow in several ways by variation of the properties of the particle sources. Here a new method is presented for the rendering of surface-particles. This method includes an improved shading model, the use of Gaussian filters for the prevention of spatial and temporal artifacts, an efficient scan-conversion algorithm, the handling of occlusion and the simultaneous rendering of geometric objects ...

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